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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,644	09/06/2005	Janos Veres	056258-5091	1253

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EXAMINER	
COLEMAN, WILLIAM D	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/523,644	VERES ET AL.	
	Examiner	Art Unit	
	W. David Coleman	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26 and 28-35* is/are rejected.

7)☒ Claim(s) *27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-6, 12-26 and 28-35 are rejected under 35 U.S.C. 102(a) as being anticipated by Steven Holdcroft, "Patterning π Conjugated Polymers", Advanced Materials, vol. 13, no. 23, December 3, 2001, pp 1753-1765.

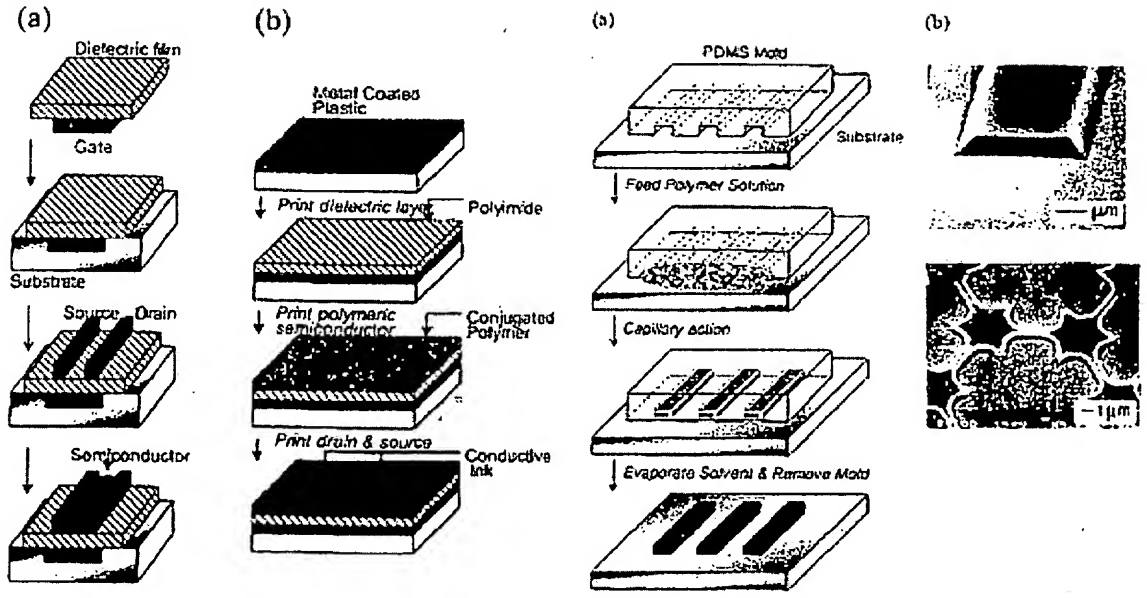
3. Pertaining to claim 1, Holdcroft teaches the method of forming an organic electronic device, which method comprises the steps of:

a) forming a negative image of a desired pattern on a substrate or layer of the device with a lift-off ink (see pp. 1757, 2nd column that addresses the negative tone resists and on pp. 1758, third paragraph that addresses the lift-off process);

b) coating a first device layer to be patterned on top of the negative image (see FIG. 9 where a metal coated plastic substrate will meet this limitation);

c) coating one or more further device layers to be patterned on top of the first device layer to be patterned; and

d) removing the lift-off ink and unwanted portions of the device layers above it, thereby leaving the desired pattern of device layers.



4. Pertaining to claim 2, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off ink is insoluble in the liquid medium used to deposit the device layers to be patterned (please see FIG. 14(b), please note that if the ink was soluble after it was deposited by the inkjet process, it would be difficult to make the electronic devices).

5. Pertaining to claim 3, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 or 2 wherein the ink comprises a liquid medium which does not dissolve the substrate or layer on which the ink is printed (please see the explanation of claim 2 as it applies to the present claim).

6. Pertaining to claim 4, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off is deposited on the substrate or layer by a direct

printing technique selected from the following: ink-jet printing, screen printing, micro-contact printing, stamping, soft lithography or electro-photographic printing using a solid or liquid toner (please see.pp. 1761).

7. Pertaining to claim 5, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the deposited lift-off ink is thicker than the device layers subsequently deposited onto it.(on pp. 1762 the conjugated polymer is about 150-300 angstroms thick, based on FIG. 14(b) it is inherent that a passivation layer cover the conjugated polymer pattern so that electrically shorting the conjugated polymer is reduced and therefore the passivation layer would have to be thicker than the conjugated polymer).

8. Pertaining to claim 6, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off pattern is from 1um to 50 um (please see pp 1754, section 2.2 where the gaps between the electrodes is from 5-1- um).

9. Pertaining to claim 12, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off ink further comprises a colorant, a polymeric binder or one or more functional additives (see pp. 1761, last paragraph and pp. 1762 first paragraph where a blue emitting spin cast buffer layer is deposited on the substrate).

10. Pertaining to claim 13, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off ink further comprises a cross-linking agent to

permit cross-linking of the printed ink (see pp. 1753, because Holdcroft uses the term "polymerization" it is equivalent to cross-linking and therefore meets the claim limitations).

11. Pertaining to claim 14, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein partial shrinkage or micro-cracks are induced to allow a lift-off medium to penetrate the ink at the pattern edges or through its surface to aid the lift-off step (d) (please note that since in the section of micro-contact printing on pp. 1760-1761 Holdcroft discloses a acid catalyzed cleavage of the THP at 130°C, the shrinkage is inherent since the liquid PEDOT-PSS film is deposited by spin casting).

12. Pertaining to claim 15, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein wetting of the ink is effected by a surface treatment of the substrate (the Examiner takes the position that heating the substrate to 130°C as described above addresses the present limitation).

13. Pertaining to claim 16, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the device layers to be patterned are each independently applied by solution, spin, spray, dip, web, die or evaporation coating (please note that Holdcroft discloses spin, solution, spray and die).

14. Pertaining to claim 17, Holdcroft teaches a method of forming an organic electronic device as claimed in 1 wherein the device layer to be patterned is applied by electroless deposition, ink-jet printing, screen printing, micro-contact printing, stamping or soft lithography.

15. Pertaining to claim 18, Holdcroft teaches a method of claim 1 wherein the thickness of each device layer or multiplicity of layers is from 1nm to 1um (as discussed above in claim 5, Holdcroft teaches a thickness in the rage of 150-300 angstroms).

16. Pertaining to claim 19, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off step (d) includes dissolving the lift-off ink using a lift-off liquid medium (because Holdcroft teaches using different solvents this limitation is met, please see pp. 1758 third paragraph where Holdcroft teaches using a conventional photoresist lift-off technique, it is well known that the developers for photoresist are in liquid form).

17. Pertaining to claim 20, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off liquid medium dissolves little or none of the device layer to be patterned (negative photoresist in the Holdcroft process meets this limitation).

18. Pertaining to claim 21, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off step (d) further includes ultrasonic agitation, stirring, spraying liquid medium and/or heating (because Holdcroft teaches a conventional lift-

off procedure, ultrasonic agitation, stirring, spraying liquid medium and/or heating is well known in conventional photoresist lift-off).

19. Pertaining to claim 22, Holdcroft teaches a method of forming an organic electron device as claimed in claim 1 wherein the device is an OFET and the device layers are each independently selected from a conductor, a dopant, an insulator or an organic semiconductor device (see pp. 1753).

20. Pertaining to claim 23, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 22 wherein the device layers include a conductor that is deposited by liquid coating (please note that Holdcroft spin-cast and evaporate a layer of aluminum, see pp. 1761, first paragraph, last sentence).

21. Pertaining to claim 24, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 23, wherein the conductor is selected from the group comprising polyaniline, polypyrrole, PEDOT, doped conjugated polymer, or dispersions or pastes of graphite or particles of metal including Au, Ag, Cu, Al, Ni or their mixtures.

22. Pertaining to claim 25, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the device layers include an OSC, which is deposited from solution,(the whole document teaches this limitation).

23. Pertaining to claim 26, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 22 wherein the device layers include an OSC comprising a polymer or oligomer including monomer of triarylamine, fluorine, or thiophene, including substituted forms thereof.

24. Pertaining to claim 28, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 22 wherein the device is a vertical OFET (see FIG. 9(a)).

25. Pertaining to claim 29, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the step d) forms one or more via openings (please note that it is necessary to form wiring layers in OFET's so that the FET functions).

26. Pertaining to claim 30, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the device is an OLED and at least one of the device layers to be patterned is selected from an anode, a cathode or an electroluminescent layer (see pp. 1758 third paragraph).

27. Pertaining to claim 31, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 30 wherein the electroluminescent layer comprises a substantially organic or organometallic electroluminescent material.

28. Pertaining to claim 32, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 31 wherein the electroluminescent layer comprises a polymer or oligomer containing monomer of thiophene, phenylene, thiophenvinylene, phenylenevinylene or fluorine, including substituted forms thereof (see pp. 1755 where Holdcroft discloses a phenylene sulfide, 2nd column, 2nd paragraph).

29. Pertaining to claim 33, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the device is an OLED and at least one of the device layers to be patterned is selected from a hole injection layer, hole transporting layer, electron injection layer, electron transporting layer or interconnect (because Holdcroft teaches an OLED the various layers , i.e., injection layer and transport layer are inherent to organic light emitting diode devices).

30. Pertaining to claim 34, Holdcroft teaches a method of forming an organic electronic device as claimed in claim 1 wherein the device is an OLED and at least one of the device layers to be patterned is a dopant or an insulator (see pp. 1755, 2nd column, 2nd paragraph wherein forming the OLED requires photodoping of S-phenylated film).

Pertaining to claim 35, Holdcroft teaches an organic electronic device obtainable by claim 1.

Claim Rejections - 35 USC § 103

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

32. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steven Holdcroft, "Patterning π Conjugated Polymers", Advanced Materials, vol. 13, no. 23, December 3, 2001, pp 1753-1765.

33. Pertaining to claim 7, Holdcroft fails to disclose a method of forming an organic electronic device as claimed in claim 1 wherein the ink is deposited by screen printing and the ink as a viscosity from 500 and 10,000 cP. The Examiner believes that the effective viscosity will be dependent on the size of the screen mesh in which the Applicant does not provide any support and therefore this claim appears to some random routine experiment of a well known process and fails to provide an inventive step. It would have been obvious through routine experimentation to claim the viscosity as claimed.

34. Pertaining to claim 8, Holdcroft fails to disclose a method of forming an organic electronic device as claimed in claim 1 wherein the ink is deposited by ink-jet printing and the ink viscosity is in the range from 3 to 40 cP. It would have been obvious through routine experimentation to claim the viscosity as claimed.

35. Pertaining to claims 9 and 10, Holdcroft fails to disclose a method of forming an organic electronic device as claimed in claim 1 wherein the ink has a surface tension in the range of 20-60 dynes/cm. Although Holdcroft doses not provide the routine surface tension of the in, it would be obvious that a surface tension exist. It is not clear if the surface tension is before or after curing the ink and therefore, it would have been obvious to one of ordinary skill in the art to measure the surface tension of the ink prior to fabrication and after fabrication as a quality assurance reference and routine experimentation.

36. Pertaining to claim 11, Holdcroft fails to disclose a method of forming an organic electronic device as claimed in claim 1 wherein the lift-off ink contains from 50% to 99.8% liquid medium, by weight. Although Holdcroft fails to provide routine experimentation of the ink, it would have been obvious to one of ordinary skill to measure the quality of the in by one of the obvious observations, which would be the liquid medium by weight.

Objections

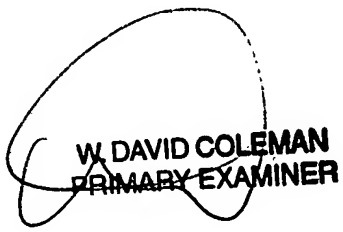
37. Claim 27 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 571-272-1856. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:30 PM.

39. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

40. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



W. David Coleman